



GREEN SPRING GARDENS PARK

PLANT INFORMATION SHEET

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GARDEN INSTALLATION

A. Soil- three basic textures:

1. Sand – coarse texture; drains rapidly
2. Loam – intermediate texture; the best for most plants
3. Clay – fine texture; drains slowly

Cannot change soil texture by adding organic matter but can improve soil structure.

B. Soil preparation for beds and borders

1. **Kill all perennial weeds (e.g., dandelions, poison ivy, and Bermuda grass)** - use glyphosate (a herbicide) or a suffocating mulch such as a thick organic mulch. Glyphosate is marketed under many names including Roundup and Razor; it is moderately toxic to humans – read and follow label directions. The outline of beds can be determined with string or a hose.

2. **Get a soil test done through Virginia Cooperative Extension/Virginia Tech Soil Testing Laboratory for lime and fertilizer recommendations and apply these amendments accordingly** - Pelletized and granular lime are the easiest to use if the pH needs to be raised.

3. **Amendments** – It is best to apply amendments before tilling. Amendments include lime, fertilizers for needed phosphorus and potassium, well rotted organic matter, and any needed coarse sand.

a. **Organic matter** - Adding a 1" layer (or more) of well rotted organic matter to most soils (except organic soils) is ideal for most plants. Compost (including Leafgro), rotted manure, and leaf mulch are excellent materials to use. Peat moss used to be widely used in the past, but drawbacks include its rapid decomposition in our climate and the destruction of wetlands from peat moss mining. Composting is a great way to have a ready source of organic matter, as well as helping our natural environment - just pile up organic materials in an area of your yard and don't worry about sorting the organic material into layers because it isn't necessary.

b. **Coarse sand or fine pine bark** - A 1" - 4" layer of coarse sand (washed concrete sand) can be added to clay soils along with organic matter if the structure is poor (many clay soils do not need to be amended with sand if the right plants are used). Organic matter must be added at the same time as sand or the soil can become as hard as concrete. Fine pine bark can be substituted for coarse sand. However, some clay soils are so sticky and dense that they cannot be amended effectively and instead should be taken out and replaced with good soil. A backhoe is a rapid way to remove poor soil, but a mattock and a shovel can be used for small areas. If possible, compost existing soil that is being removed.

If the site is poorly drained, other options include using raised beds, installing drainage, or doing grading corrections (at least a 1% slope). Extensive modifications like these are primarily done for intensively gardened areas like vegetable gardens.

4. **Tillage** - Double digging is not necessary. Use a shovel or rototiller to turn the soil. Break up the clumps after digging. Dig to a single spade depth (up to 12" deep). Tillage can be done whenever the soil isn't

frozen or too wet. If the soil is compacted, a mattock can be used to break it up. Alternatively, no-tillage is a time-saving option if extensive amending of soil is not necessary. For example, I have killed turf with glyphosate in the fall, mulched with about 3 inches of leaf mulch after the turf died, directly planted in the dead turf in the spring, and had a beautiful garden by the fall.

Special Tip for Woodland Gardens: Tilling can be difficult because of tree roots and can damage trees. Usually soil is prepared for planting in the immediate planting area only with a shovel or mattock, then mulched after planting.

5. **Raking** – After tilling, level the soil (or have it slightly raised in the middle of the bed) with a landscape rake and let the soil settle before planting.

C. Plant Selection - consider the following:

1. **Light (exposure)** - note seasonal differences

a. Full sun - 6 hours or more of sunlight daily

b. Partial shade - examples:

- * an area shaded part of the day
- * among deciduous trees with high branches
- * among deciduous trees with foliage that is not heavy
- * among thinned deciduous woods

c. Full shade - examples:

- * shade under a dense deciduous tree canopy
- * shade beneath many evergreens

or

d. Southern - summer breeze from SW or SE, hot midday sun and high summer temperature, mild protected winter

e. Eastern - mild morning sun, cooler summer temperature, mild protected winter

f. Northern - cool summer, cold unprotected winter, cold NW winter wind

g. Western - afternoon sun, hot summer temperature, cold NW winter wind

Special Tip for Woodland Gardens: May need to remove trees or limb them up to increase light levels. May need to clear brush to make room for choice plants. Learn what poison ivy looks like so you can protect yourself!

2. **Soil moisture** - dry, moist, or wet (standing water) sites

3. **Soil texture and pH** - most plants prefer a pH between 5.5 - 7.5 (6-7 is best) and a loamy soil; ericaceous plants (e.g., azaleas and rhododendrons) are a notable exception: they prefer a pH between 5.0 - 5.5. Many woodland perennials like a pH between 5.5 and 6.5. A pH of 7 is neutral, below 7 is acid, and above 7 is alkaline (basic).

4. **Plant hardiness** - adaptation to winter's cold, and summer's heat and humidity, needed. The Washington, DC area is mostly Zone 7 on the 2003 edition of the USDA Plant Hardiness Zone Map, although portions of DC, Arlington, and Alexandria are in Zone 8. Zone 7 has an average annual minimum temperature of 10 to 0 degrees F. Zone 8 has an average annual minimum temperature of 20 to 10 degrees F. Use these zones only as a guide!

Think microclimate and cultural requirements when placing plants!

D. Planting

1. **Planting time for hardy perennials**- Spring or fall is best, depending on the species (perennials that are borderline hardy are best planted in the spring so they have more time to establish). Summer planting is fine for most plants with careful watering.

Planting in the fall - Need to plant early enough so a good root system develops before the onset of cold weather. If plants aren't firmly anchored, heaving of plants out of the soil can result due to alternate

freezing and thawing (less of a problem with large container grown stock). The best time to plant in the fall is from September into early October.

2. Planting perennials - Use a hand trowel or a shovel to dig a hole that is wide enough and deep enough for roots to spread out (about one and one-half times the width of the root ball). Tease the roots free along the sides and bottom of the root ball of container grown plants. Plant at grade (the same depth as in the pot) or slightly above grade and firm the soil with your hand. Water plants individually after planting.

Coarse sand, pea gravel, and/ or chicken grit (grit = crushed granite; grower grit and developer/layer grit are the sizes we use as a soil amendment) may need to be added to the soil surrounding plants that require very well drained soil (e.g., lavender). In addition, if you are planting moisture loving plants, you may want to mix well rotted organic matter, such as compost or Leafgro, into the surrounding soil (up to 1/3

compost by volume in the existing soil).

I sometimes use mature plant widths to determine spacings (measure from the center of plants; see *Herbaceous Perennial Plants. A Treatise on Their Identification, Culture, and Garden Attributes* by Allan Armitage [2nd edition]). However, you may want to overplant some perennials to achieve a fuller look more rapidly, then move plants to other beds as they grow more crowded.

Special Tip for Certain Woodland Plants: Calcium-loving woodland plants, such as maidenhair fern (*Adiantum pedatum*) and black snakeroot (*Cimicifuga racemosa*), benefit from having gypsum (calcium sulfate) added to the backfill soil at planting time. Lime can also be used.

3. Planting of woody plants (trees, shrubs, woody vines, and woody groundcovers) – The planting hole should be dug as deep as you want the plants placed and three times wider than the root ball. A mattock may be needed to prepare compacted soil. Tease the roots free along the sides and bottom of the root ball of container grown plants. Small plants should be planted at grade or slightly above grade (up to 1" higher than in the pot). Large plants that are in containers or that are balled and burlapped should be planted slightly above grade. Large plants can be planted as high as 25 to 33% above grade in heavily compacted clay soil if the plant species is adapted to these tough growing conditions. However, if plants are planted high above grade, very close attention needs to be paid to mulching because it is much easier for roots to sunscald. With balled and burlapped plants, remove any soil from the crown or root flare when planting because the crown is commonly covered up with soil. Also remove as much cloth burlap as possible (leaving a small amount at the base of the root ball is fine), but remove all wrapping material if it is woven plastic. A small amount of well rotted organic matter can be mixed into the backfill soil (up to 1/3 compost by volume), but woody plants have extensive root systems and you don't want the planting hole to act like a container. Therefore, if the soil is heavy clay or light sand, it is better to amend the soil over the entire planting area, not just the planting hole, and to grow plants that are adapted to the site conditions.

After planting, firm the soil by hand, water plants individually, and stake only if needed (stakes are usually removed after one year). Black plastic chain link and 2" x 2" posts work well for staking (I use twine on smaller plants). For large plants, wire and rubber hose are often used for staking.

Trees can be planted as close together as 5 to 10 feet for an intimate feel. Trees can also be spaced at mature widths. I often use mature widths for shrub spacing (see *Manual of Woody Landscape Plants* by Michael Dirr [5th addition]).

4. Planting hardy bulbs - The general rule of thumb is to plant 3 times the height of the bulb deep (measure from the top of the bulb). Don't worry about the depth – most bulbs do fine when they're simply planted with a trowel with adequate soil above them. Good drainage is essential for most bulbs. Most bulbs are planted in the fall (late October - early November), although some can be planted in the spring (e.g., lilies).

5. Planting annuals, biennials, tender perennials, and tender bulbs - Plant individual plants as you would plant perennials, although small annuals in 4-packs seldom need root disturbance. Plant tender plants after May 1 at the earliest. Half-hardy annuals (e.g., snapdragons) can be planted after April 15. Biennials (e.g., foxglove) and hardy annuals can be planted before April 15. Some hardy annuals are even planted in the fall for fall, winter, and spring bloom (e.g., pansies). Water plants individually after planting. Some annuals can also be direct seeded (e.g., cleome).

E. Care Immediately after Planting

1. Mulching - Mulches reduce evaporation of soil moisture, reduce weed populations, and gradually enrich the soil. Apply to a depth of 2"-3". Do not mulch too closely to the crowns (plant base) because crown rot can occur. Mulching materials include leaf mulch, pine bark, shredded hardwood bark, and grass clippings (don't use grass clippings if the lawn was recently treated with herbicides). I personally prefer leaf mulch because it is free (available from local governments), attractive, and breaks down rapidly enough to supply needed nutrients to plants, greatly reducing the need for fertilization.

Special tip for plants that need excellent drainage and air circulation, such as many rock garden and Mediterranean (e.g., lavender) plants: these plants can be mulched with a layer of pea gravel.

2. Fertilization - Fertilize plants lightly after planting if needed (e.g., if the plant is showing signs of a nutrient deficiency): most plants do not need fertilization right after planting. One notable exception is vegetable transplants, which respond well to fertilization right after planting - vegetables will generally produce food faster when fertilized. I prefer to use a liquid fertilizer, such as 20-20-20, if a plant is strongly nutrient deficient. Granular fertilizers can also be used if lightly applied, but the likelihood of fertilizer burn is much greater when quick-release granular fertilizers are used. A better alternative for both the environment and for plants is to use an organic fertilizer (e.g., Plant-tone [5-3-3]) or slow-release inorganic fertilizer (e.g., 50% slow-release 10-6-4). A 10-6-4 fertilizer is 10% nitrogen, 6% phosphate (indicates phosphorus level - phosphate is 44% phosphorus), and 4% potash (indicates potassium level - potash is 83% potassium). I usually apply granular fertilizers by hand using rubber or plastic gloves. Water granular fertilizers in well after application.

Bulbs - Tulips and miscellaneous bulbs prefer a fertilizer with high levels of nitrogen (e.g., 10-6-4), while daffodils prefer a fertilizer with a low nitrogen level and a higher phosphorus and potassium analysis (e.g., 5-10-20 slow release fertilizer). After planting bulbs in the fall, granular fertilizer can be lightly sprinkled on top of the soil. Fertilization usually is not necessary in fertile soils, especially if shredded leaves are used as a mulch: leaf mulch breaks down rapidly enough to supply needed nutrients. We seldom fertilize bulbs at Green Spring.

3. Watering - One inch a week is needed during the growing season for most plants, except drought tolerant or water-wise plants. Even drought tolerant plants need adequate moisture until their root systems get established. Water deeply rather than sprinkling lightly. For example, at Green Spring we generally put water on a given area (with an oscillating sprinkler or impact sprinkler) for one to two hours at a time when rainfall is inadequate. Another alternative is hand watering, which uses far less water than sprinklers. I use a large galvanized watering trough at home to catch rainwater for watering plants and for replenishing the pond. It's free and highly convenient!

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Updated 3/2003 (Installation)